



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

|  |           |  |
|--|-----------|--|
| <b>(51) International Patent Classification <sup>6</sup> :</b><br><b>H04K 1/00</b>   | <b>A1</b> | <b>(11) International Publication Number:</b> <b>WO 97/16897</b><br><b>(43) International Publication Date:</b> 9 May 1997 (09.05.97)  |
| <b>(21) International Application Number:</b> PCT/US96/17556<br><b>(22) International Filing Date:</b> 30 October 1996 (30.10.96)<br><b>(30) Priority Data:</b><br>08/548,305 1 November 1995 (01.11.95) US<br><b>(71) Applicant:</b> FIRST VIRTUAL HOLDINGS, INC. [US/US];<br>Suite 300, 11975 El Camino Road, San Diego, CA 92130 (US).<br><b>(72) Inventors:</b> ROSE, Marshall, T.; 420 Whisman Court, Mountain View, CA 94043 (US). STEIN, Lee, H.; 17435 Los Morros, Rancho Santa Fe, CA 92067 (US). BORENSTEIN, Nathaniel, S.; 1724 Shadford, Ann Arbor, MI 48104 (US). LOWERY, Carlyn, M.; 508 Second Street, Petaluma, CA 94952 (US). NEW, Darren; 13911 Durango Drive, Del Mar, CA 92014 (US). STEFFERUD, Einar; 17301 Drey Lane, Huntington Beach, CA 92647 (US).<br><b>(74) Agent:</b> KOZAK, Frank, J.; Brinks Hofer Gilson & Lione, NBC Tower, Suite 3600, 455 North Cityfront Plaza Drive, Chicago, IL 60611-5599 (US).   |           | <b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).<br><br><b>Published</b><br><i>With international search report.<br/>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> |
| <b>(54) Title:</b> COMPUTERIZED PAYMENT SYSTEM FOR PURCHASING GOODS AND SERVICES ON THE INTERNET   |           |  |
| <b>(57) Abstract</b><br><br>A method and system for use on a quasi-public network, such as the Internet, to enable users of the network to conduct commercial transactions involving a payment of funds by one user to another user of the network. The method includes operating a computer system for sending and receiving messages from users over the network. Upon receiving a message over the network from a qualified user-seller, a message is sent over the network to the user-buyer that was identified in the message from the user-seller. The message to the user-buyer requests confirmation of a transaction identified in the message received from the user-seller. Upon receiving a confirmation over the network from the user-buyer, payment information is sent by secure channels off the network to an agent of the user-seller. The user-seller's agent may be a separate entity or the function of the user-seller's agent may be performed by the transaction enabling system. Upon receipt of an authorization code from the seller's agent, the authorization code is encrypted and sent to the user-seller over the network. |           |  |

BEST AVAILABLE COPY

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

|    |                          |    |  |    |                          |
|----|--------------------------|----|--|----|--------------------------|
| AM | Armenia                  | GB | United Kingdom                           | MW | Malawi                   |
| AT | Austria                  | GE | Georgia                                  | MX | Mexico                   |
| AU | Australia                | GN | Guinea                                   | NE | Niger                    |
| BB | Barbados                 | GR | Greece                                   | NL | Netherlands              |
| BE | Belgium                  | HU | Hungary                                  | NO | Norway                   |
| BF | Burkina Faso             | IE | Ireland                                  | NZ | New Zealand              |
| BG | Bulgaria                 | IT | Italy                                    | PL | Poland                   |
| BJ | Benin                    | JP | Japan                                    | PT | Portugal                 |
| BR | Brazil                   | KE | Kenya                                    | RO | Romania                  |
| BY | Belarus                  | KG | Kyrgyzstan                               | RU | Russian Federation       |
| CA | Canada                   | KP | Democratic People's Republic<br>of Korea | SD | Sudan                    |
| CF | Central African Republic | KR | Republic of Korea                        | SE | Sweden                   |
| CG | Congo                    | KZ | Kazakhstan                               | SG | Singapore                |
| CH | Switzerland              | LI | Liechtenstein                            | SI | Slovenia                 |
| CI | Côte d'Ivoire            | LK | Sri Lanka                                | SK | Slovakia                 |
| CM | Cameroon                 | LR | Liberia                                  | SN | Senegal                  |
| CN | China                    | LT | Lithuania                                | SZ | Swaziland                |
| CS | Czechoslovakia           | LU | Luxembourg                               | TD | Chad                     |
| CZ | Czech Republic           | LV | Larvia                                   | TG | Togo                     |
| DE | Germany                  | MC | Monaco                                   | TJ | Tajikistan               |
| DK | Denmark                  | MD | Republic of Moldova                      | TT | Trinidad and Tobago      |
| EE | Estonia                  | MG | Madagascar                               | UA | Ukraine                  |
| ES | Spain                    | ML | Mali                                     | UG | Uganda                   |
| FI | Finland                  | MN | Mongolia                                 | US | United States of America |
| FR | France                   | MR | Mauritania                               | UZ | Uzbekistan               |
| GA | Gabon                    |    |  | VN | Viet Nam                 |

1                   COMPUTERIZED PAYMENT SYSTEM  
2                   FOR PURCHASING GOODS AND SERVICES  
3                   ON THE INTERNET

4           REFERENCE TO RELATED APPLICATION

5                   This application is related to copending  
6           application Serial No. 08/308,101, filed September 16,  
7           1994, the entire disclosure of which is hereby  
8           incorporated by reference herein.

9           BACKGROUND OF THE INVENTION

10                   The present invention relates to a system for  
11           enabling payment for goods and services over a quasi-  
12           public network, and more particularly, the present  
13           invention relates to a payment system that can be used to  
14           enable an Internet user to initiate a payment to another  
15           Internet user for goods or services over the Internet.

16                   The Internet has emerged as a large community  
17           of electronically-connected users located around the  
18           world who readily and regularly exchange significant  
19           amounts of information. The Internet continues to serve  
20           its original purposes of providing for access and  
21           exchange of information among government agencies,  
22           laboratories, and universities for research and  
23           education. In addition, the Internet has evolved to  
24           serve a variety of interests and forums that extend  
25           beyond its original goals.

26                   The Internet has been considered as a potential  
27           new marketplace for various types of products, including  
28           goods and services. Using the Internet as a marketplace  
29           has many advantages. Although the Internet presently has  
30           the capability to serve as a marketplace for goods and  
31           services, use of the Internet for this purpose has been  
32           slow to develop. One reason for this lack of development  
33           is that it is difficult to pay for goods or services  
34           using the Internet. An Internet user cannot send cash or  
35           a check via the Internet. Sending a check via physical

1 delivery services is slow and sending a credit card  
2 number over the Internet poses security problems.

3 In the aforementioned patent application,  
4 Serial No. 08/308,101, there was disclosed a payment  
5 system that enabled payment on a quasi-public system,  
6 such as the Internet. The payment system described in  
7 the referenced application is useful for enabling payment  
8 for a variety of products and services, especially for  
9 information products that can be delivered electronically  
10 over the network without physical packaging. Information  
11 products include software, stories, cartoons, recipes,  
12 etc.

13 The aforementioned payment system has proven  
14 successful. However, there continues to be a need for a  
15 payment system for users of the Internet who have  
16 products to vend. Such products include goods and  
17 services that could be as diverse as clothing, computer  
18 hardware, technical support and advice, groceries,  
19 educational courses and training, etc. These types of  
20 goods and services are not necessarily capable of being  
21 transmitted electronically over the network. Such  
22 products may also include information products, as  
23 described above. Since the Internet provides a medium  
24 for users who have all these types of products to sell to  
25 reach users who have an interest in purchasing these  
26 types of products, it would be advantageous if a system  
27 were available for willing users to enter into  
28 transactions with other users for the purchase of these  
29 goods and services.

30 Accordingly, there is a need for a system that  
31 enables users of the Internet to enter into commercial  
32 transactions for goods and services.

### 33 SUMMARY OF THE INVENTION

34 According to a first embodiment of the present  
35 invention, there are provided a method and payment system  
36 for use on a quasi-public network, such as the Internet,

1 to enable users of the network to conduct commercial  
2 transactions involving a payment of funds by one user to  
3 another user of the network. The embodiment includes  
4 operation of a computer system for sending and receiving  
5 messages from users over the network. Upon receiving a  
6 message over the network from a qualified user-seller, a  
7 message is sent over the network to the user-buyer that  
8 was identified in the message from the user-seller. The  
9 message to the user-buyer requests confirmation of a  
10 transaction identified in the message received from the  
11 user-seller. Upon receiving a confirmation over the  
12 network from the user-buyer, payment information is sent  
13 by secure channels off the network to an agent of the  
14 user-seller. Upon receipt of an authorization code from  
15 the seller's agent, the authorization code is  
16 cryptographically signed and sent to the user-seller over  
17 the network.

#### 18 BRIEF DESCRIPTION OF THE DRAWINGS

19 Figure 1 is a block diagram illustrating a  
20 payment system according to a first embodiment of the  
21 present invention.

22 Figure 2 is a block diagram of a hardware  
23 configuration for the payment system of Figure 1.

24 Figure 3 is a block diagram of the program  
25 arrangement of the payment system of Figure 1.

26 Figure 4A is a diagram of the data fields for a  
27 buyer's cardholder account for use with the payment  
28 system of Figure 1.

29 Figure 4B is a diagram of the data fields for a  
30 seller's account for use with the payment system of  
31 Figure 1.

32 Figure 5 is a flow chart showing message flow  
33 for an payment request using the payment system of  
34 Figure 1.

35 Figures 6A-6F are diagrams of data messages  
36 used in connection with the payment system of Figure 1.

1           Figure 7 is a flow chart showing the message  
2           flow for an payment query and a payment response using  
3           the payment system of Figure 1.

4           Figure 8 is a flow chart showing the message  
5           flow using the payment system of Figure 1 for  
6           communication with the seller's agent.

7           Figure 9 is a flow chart showing the message  
8           flow for sending an encrypted authorization code to the  
9           seller using the payment system of Figure 1.

#### 10       DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

##### 11       I.   OVERALL SYSTEM

12           Figure 1 shows a block diagram of a first  
13           embodiment of the present invention for a payment  
14           system 10. The payment system 10 is shown in relation to  
15           the Internet network 12. The Internet network 12 is a  
16           large, quasi-public network having many users 14. The  
17           Internet network 12 is of a type that the users 14 can  
18           access by various means such as dedicated communication  
19           links or conventional commercial telephone systems. The  
20           Internet network 12 provides numerous services for its  
21           users such as e-mail, FTP, and the World Wide Web (WWW).  
22           Although the payment system 10 is specifically useful for  
23           the Internet, it may be used in conjunction with other  
24           having a plurality of users that can communicate with  
25           each other by e-mail.

26           In the embodiment of Figure 1, one of the users  
27           14 (designated as a buyer 20) wishes to acquire goods or  
28           services 26 from another of the users (designated as a  
29           seller 28). The seller 28 may be any user with a product  
30           or service to vend. The goods or services may include  
31           anything that can be sold for value, such as clothing,  
32           appliances, computers, automobiles, technical advice,  
33           consulting, and so on. The goods or services may also  
34           include information products that can be transferred  
35           electronically over a network, such as the Internet.

1           The seller 28 wishes to sell goods or services  
2     26 to the buyer 20 at a price. The price may be an  
3     advertised price (e.g. advertised over the Internet, on a  
4     bulletin board, or other media), or may be a negotiated  
5     price (e.g. negotiated via message or e-mail exchange  
6     over the Internet). Although the example of Figure 1  
7     describes one seller 28 and one buyer 20, the payment  
8     system 10 is understood to extend to include multiple  
9     buyers of one seller, multiple sellers to one buyer, and  
10    multiple sellers and multiple buyers. Also, a buyer or a  
11    seller may be an individual, a company, or an  
12    institution.

13           Also shown in Figure 1 is a financial  
14    transaction settlement system 30. The financial  
15    transaction settlement system 30 represents presently-  
16    available commercial institutions that process credit and  
17    other financial transactions. For example, the financial  
18    transaction settlement system 30 may represent  
19    commercially available credit card processing  
20    institutions (e.g. Visa, Master Card, Discover, and so  
21    on). The financial transaction settlement system 30  
22    includes two components: an issuer 32 and an acquirer 34.  
23    The issuer 32 includes banks, or other institutions, that  
24    issue credit cards to persons, send statements and bills  
25    to credit card holders on a regular basis, and collect  
26    payment from the credit card holders. These functions  
27    are not performed on the Internet but use conventional  
28    mail delivery, authorized direct withdrawals from bank  
29    accounts, etc.

30           The payment system 10 of the present embodiment  
31    utilizes these commercially available issuers 32 to bill  
32    users and to collect payment from users for their  
33    transactions on the Internet 12 using the payment system  
34    10. For example, a user's transactions that are  
35    initiated using the payment system 10 would show up on  
36    the user's credit card statement as a charge from the  
37    seller 28.

1                   As mentioned above, the financial transaction  
2       settlement system 30 also includes the acquirer component  
3       34. This acquirer component 34 includes banks or other  
4       institutions that provide merchant accounts for entities  
5       that want to receive payment for the sale of goods or  
6       services. These merchant accounts are similar or  
7       identical to the conventional merchant accounts that are  
8       provided to businesses. As mentioned below, the acquirer  
9       34 processes the user charges received from the payment  
10      system 10 and passes this information to the issuer  
11      component 32 for the preparation and sending of monthly  
12      statements and bills to users and collecting payment from  
13      users.

14                   The payment system 10 includes two distinct  
15      parts or systems: an above-the-line system 40 and a  
16      below-the-line system 42. The above-the-line system 40  
17      and the below-the-line system 42 are separated by a  
18      "line" or "firewall" 44. The line 44 isolates the above-  
19      the-line system 40 from the below-the-line system 42.  
20      The line 44 permits limited communication between the  
21      above-the-line system 40 and the below-the-line system 42  
22      but prevents unauthorized access to the below-the-line  
23      system 42 through the above-the-line system 40. The line  
24      44 provides security for the information contained on the  
25      below-the-line system 42 and prevents hackers on the  
26      Internet from entering the below-the-line system 42 via  
27      the above-the-line system 40.

28                   Figure 2 is a block diagram illustrating one  
29      possible configuration of hardware components used to  
30      implement the payment system 10 of Figure 1. The above-  
31      the-line system 40 includes an above-the-line (or "front  
32      end") computer 50 and the below-the-line system 42  
33      includes a below-the-line (or "back end") computer 52.  
34      The above-the-line computer 50 and the below-the-line  
35      computer 52 are connected together via a private network  
36      53. In a preferred embodiment, the private network is an  
37      Ethernet network. The above-the-line computer 50



1 includes an above-the-line system board 54 associated  
2 with an above-the-line memory 56, a storage device 58  
3 such as a fixed disk drive, a back up tape drive 60, a  
4 removable media drive 62, a monitor 64, and a power  
5 supply 66. The above-the-line computer 50 is connected  
6 to the Internet 12 by means of a leased T1 line 69.

7 The below-the-line computer 52 includes a  
8 below-the-line computer system board 68 associated with a  
9 below-the-line computer memory 70, a below-the-line  
10 computer storage device 72 such as a fixed disk drive, a  
11 back up tape drive 74, a removable media drive 76, a  
12 monitor 78, and a power supply 80. The below-the-line  
13 computer 52 is connected to the above-the-line computer  
14 50 by means of Ethernet cable. The below-the-line  
15 computer 52 also has a Novell LAN 81 that provides a  
16 secure communication link apart from the Internet.

17 Both the above-the-line computer 50 and the  
18 below-the-line computer 52 in this embodiment are  
19 preferably commercially available Sun Microsystems SS1000  
20 computers. Preferably, both the above-the-line computer  
21 50 and the below-the-line computer 52 are equipped with  
22 64 MB memory. As mentioned above, the dedicated private  
23 network is an Ethernet and includes a SBus host adaptor.  
24 The communication server is a Sun Microsystems  
25 SPARCserver 1000. Both the above-the-line monitor 64 and  
26 the below-the-line monitor 78 are commercially available  
27 Sun 17 inch monitors. The above-the-line and below-the-  
28 line tape drives are Python 5GB tape drives using 4mm  
29 tape available from Sony, Inc. The above-the-line disk  
30 drive 58 and the below-the-line disk drive 72 are  
31 commercially available Seagate 1.7GB disk drives. The  
32 host adaptor is a Sun Microsystems SBus host adaptor.  
33 The network server is a commercially available Sun  
34 Microsystems SSarray 101. The above-the-line and below-  
35 the-line computers 50 and 52 may be similar or identical  
36 to the front end and back end computers that are

1 described in the aforementioned related patent  
2 application Ser. No. 08/308,101.

3 Referring to Figure 3, the above-the-line  
4 computer 50 runs an above-the-line program 90. The  
5 above-the-line program 90 is a software program that  
6 provides for communication with users 14 on the Internet  
7 12. Specifically, the above-the-line program 90 includes  
8 modules that can be accessed and used by Internet users  
9 who are buyers 20 and Internet users who are sellers 28.

10 The below-the-line computer 52 runs a below-  
11 the-line program 92. The above-the-line program 90  
12 communicates with the below-the-line program 92 via the  
13 private network 53. Thus, the above-the-line program 90  
14 is physically separate and isolated from the below-the-  
15 line program 92. The below-the-line program 92 receives  
16 information from and sends information to the above-the-  
17 line program 90 by means of batch processing. This  
18 comprises, in part, the firewall or line 44 and results  
19 in an inherently safe method of communicating between the  
20 publicly accessible part of the payment system, i.e. the  
21 above-the-line system 40, and the secure part of the  
22 payment system, i.e. the below-the-line system 42.

23 To access the above-the-line program 90 over  
24 the Internet, users 14 who are buyers may use a user  
25 interface software program 118 that can be run on their  
26 own computers for interactive access, or alternatively,  
27 users 14 may access the payment system 90 via  
28 conventional e-mail programs, for store-and-forward  
29 access. Similarly, users who are sellers 28 may access  
30 the above-the-line program 90 over the Internet, by  
31 running an interface software program 119 on their own  
32 computers for interactive access, or alternatively, may  
33 access the payment system 10 via conventional e-mail  
34 program. Programs 90, 118, and 119 may be written in any  
35 suitable programming language, such as Tcl or C. The  
36 software modules are capable of being used with the UNIX

1 operating system, DOS, and may be ported to various other  
2 operating systems.

3 **II. ESTABLISHING BUYERS AND SELLERS ACCOUNTS**

4 In order for a user of the Internet to use the  
5 payment system 10 for transactions as a buyer, the user  
6 obtains a subscriber (or cardholder) account 100 with the  
7 payment system 10. The buyer's cardholder account may be  
8 similar or identical to the cardholder account described  
9 in the related patent application. In order for a user  
10 of the Internet to use the payment system 10 for  
11 transactions as a seller, the user obtains a seller's  
12 account 200 with the payment system 10. Each user may  
13 arrange with the payment system 10 individually to set up  
14 appropriate accounts, or alternatively, a bank may make  
15 arrangements with the payment system 10 to provide  
16 appropriate accounts to a large number of the bank's  
17 customers, such as its credit card customers, as a  
18 enhancement or a promotion. The characteristics of the  
19 buyer's and seller's accounts are set forth as follows:

20 **A. The buyers' accounts**

21 Referring to Figure 4A, there is depicted a  
22 representation of the data in a buyer's cardholder  
23 account 100. The buyer's cardholder account 100 includes  
24 the following information: a cardnumber 102, the  
25 cardholder's name 103, the cardholder's Internet e-mail  
26 address 104, a state 106, and a pay-in selection 108.  
27 These items are explained below. In addition, the  
28 cardholder account 100 may include additional  
29 information, such as a pay-out selection and a currency  
30 preference 112, as disclosed in the aforementioned patent  
31 application.

32 The cardnumber 102 uniquely identifies the  
33 cardholder account 100. The cardnumber 102 is an  
34 alphanumeric string that is easily typed and read by  
35 a human. Also, the cardnumber 102 is relatively hard to

1 guess and bears no deductible relationship to any  
2 financial artifact, such as a credit cardnumber,  
3 a checking account number, nor to any e-mail address.

4 The cardholder's name 103 is the cardholder's  
5 actual name, business name, or an alias.

6 The cardholder Internet e-mail address 104 is  
7 the e-mail address of the cardholder that is unique for  
8 each user of the Internet.

9 The state 106 is one of "active", "suspended",  
10 or "invalid."

11 The pay-in selection 108 is how the cardholder  
12 transfers funds, i.e. makes payment, for use with the  
13 payment system 10. Typically, this may be done by using  
14 a conventional authorization to charge a credit card.  
15 The pay-in selection is not encoded in nor directly  
16 derivable from the cardnumber.

17 Users of the Internet who wish to use the  
18 payment system 10 for the purchase of goods or services  
19 over the Internet may obtain cardholder or subscriber  
20 accounts as described in the aforementioned patent  
21 application, or by making an application to First Virtual  
22 at its web site.

#### 23 B. The sellers' accounts

24 Users of the Internet who wish to use the  
25 payment system 10 as sellers need to be qualified.  
26 Sellers are qualified by establishing a relationship with  
27 an acquiring bank 34 that underwrites the seller 28 for  
28 credit worthiness and that provides the seller 28 with a  
29 merchant account. As shown in Figure 1, an acquiring  
30 bank 34 is part of the settlement system 30.  
31 Establishing a merchant account enables the seller 28 to  
32 act as a merchant and accept credit cards (or credit card  
33 numbers) for payment for goods and services.

34 Referring to Figure 1, when a user becomes  
35 qualified as a seller, the user also establishes a  
36 relationship with a seller's agent 115. The seller's

1 agent 115 is a bank card processor that interacts with  
2 the credit card bureaus 117 such as Visa, Master Card,  
3 etc., that are part of the settlement system 30. The  
4 seller's agent 115 performs the functions of credit card  
5 authorizations and chargebacks. Companies that are now  
6 performing these services include EDS and FDR. For  
7 example, in a conventional credit card transaction at an  
8 retail outlet, after a customer presents a credit card  
9 for payment, the clerk passes the card through a card  
10 reader that makes a call to a bank card processing  
11 company for authorization. The call from the card reader  
12 identifies the card number and the amount of sale. If  
13 the credit card is valid and the amount is within the  
14 credit limits of the card, the seller's agent 117  
15 responds with an authorization code. In the context of  
16 the present embodiment of the payment system, it is  
17 intended that sellers' agents 115 will perform similar  
18 functions as they do now with respect to conventional  
19 credit card transactions. There may be many seller's  
20 agents associated with different sellers, or many of the  
21 sellers may use the same agent. In an alternative  
22 embodiment, the payment system 10 may perform the  
23 function of seller's agent.

24 As mentioned above, a user of the Internet who  
25 wishes to use the payment system 10 to obtain payment for  
26 transactions as a seller of goods or services obtains a  
27 seller's account 200 with the payment system 10.  
28 Referring to Figure 4B, the seller's account 200 includes  
29 the following data: a seller's account cardnumber 202,  
30 the seller's name 203, the seller's Internet e-mail  
31 address 204, and a state 206. These data are similar to  
32 the data in the buyer's cardholder account 100. The  
33 seller's account 200 includes at least one additional  
34 item of data that is not included in the buyer's  
35 cardholder account, that is, the seller's account 200  
36 includes a seller's agent number 219. In addition, the  
37 seller's account may include other information.

1                   Referring again to Figure 3, the buyer  
2     cardholder account and seller account information is  
3     distributed in the payment system 10. Only a portion of  
4     the buyer cardholder account and seller account  
5     information resides in the above-the-line system 40 where  
6     it is accessible by the above-the-line program 90.  
7     However, full copies of all the buyers' cardholder and  
8     sellers' account information reside on the below-the-line  
9     system 42 where it is accessible by the below-the-line  
10    program 92. Specifically, the parts of the subscriber  
11    and seller account information that reside on the above-  
12    the-line computer 50 are located in one or more data  
13    files 91 stored on the above-the-line computer storage  
14    device 58. The subscriber and seller account information  
15    that resides on the below-the-line computer 52 is located  
16    in one or more data files 114 stored on the below-the-  
17    line computer storage device 72. The above-the-line  
18    program 90 operates with the database file 91 that is  
19    stored on the above-the-line storage 58 and the below-  
20    the-line program 92 operates with the database file 114  
21    located on the below-the-line storage 72.

22                The items of information in the buyer  
23    cardholder account located in the file 91 on the above-  
24    the-line computer 50 include the subscriber account  
25    number 102, the cardholder's name 103, the Internet  
26    e-mail address information 104, and the state 106.  
27    However, the above-the-line computer 50 does not contain  
28    any of the pay-in 108 information, such as credit card  
29    information, etc., associated with the buyer-subscriber.  
30    Credit card or other payment information is located only  
31    in the data file 114 located on the storage device 72 of  
32    the below-the-line system 42. Similarly, the items of  
33    information in the seller's account 200 located on the  
34    above-the-line system 40 include the seller's account  
35    number 202, the seller's name 203, the seller's Internet  
36    e-mail address information 204, and the state 206 of the  
37    seller's account. However, the above-the-line system 40

1 does not contain the seller's agent number 219. This  
2 information is located only in the data file 114 on the  
3 storage device 72 of below-the-line computer 52.

4 III. METHODS OF OPERATION OF THE PAYMENT SYSTEM

5 As mentioned above, the payment system 10  
6 provides users of the Internet with a means for  
7 initiating a payment transaction, and in particular, a  
8 means for payment for goods or services.

9 It is assumed for purposes of the operation of  
10 the embodiment described herein that the Internet user  
11 who wants to make a payment has already established a  
12 buyer's cardholder account with the payment system, as  
13 described above. Further, it is assumed that the  
14 Internet user who wants to receive payments has  
15 established a seller's account with the payment system,  
16 as described above.

17 Referring to Figure 5, an Internet user (i.e.  
18 the buyer 20) becomes aware of goods or services that the  
19 seller 28 has to vend. This may occur in many different  
20 ways. For example, the buyer 20 may be searching on the  
21 Internet for a seller of the particular product or  
22 service. Alternatively, the buyer 20 may be "browsing"  
23 and happen upon the seller's page. Also, the seller 28  
24 may send messages to a class of Internet users to inform  
25 them of the goods or services that it has to sell. The  
26 buyer 20 may be aware of the seller 28 via advertising,  
27 on the Internet or other media, through others, from a  
28 bulletin board, from a product warehouse on the Internet,  
29 or any other means.

30 The buyer 20 becomes interested in the goods or  
31 services that the seller 28 has to vend and then the  
32 buyer 20 may contact the seller 28 by sending a message  
33 to the seller's Internet address or by an interactive  
34 protocol, e.g. the World Wide Web, FTP, etc. The means  
35 to contact the seller, e.g. the seller's e-mail address  
36 or Web site address, may be included in advertising, etc.

1     The buyer 20 and the seller 28 may partake in an exchange  
2     of messages 107 over the Internet before the buyer 20  
3     decides to purchase the goods or services from the seller  
4     28. For example, the buyer 20 may send messages to the  
5     seller 28 to inquire about product availability,  
6     specifications, options, support, etc. The seller 28 may  
7     respond with appropriate messages over the Internet in  
8     reply to the buyer's inquiries. Also, the buyer and  
9     seller may exchange messages to negotiate a price for the  
10    goods or services. In addition, if the goods or services  
11    that the seller wants to sell are of a type that require  
12    a physical delivery, the buyer and seller may make  
13    appropriate arrangements for such delivery by message  
14    exchange over the Internet.

15             When the buyer 20 decides to buy the goods or  
16    services, the buyer 20 informs the seller 28 of the  
17    buyer's cardnumber 102 by providing an appropriate  
18    message 128 over the Internet 12. The information  
19    included in the buyer's message 128 is represented in  
20    Figure 6A. The message 128 may take the form of an  
21    e-mail message over the Internet 12 that includes the  
22    buyer's cardnumber, or alternatively, the buyer 20 may  
23    inform the seller of its cardnumber 102 by means of  
24    interactive protocols, or by including the cardnumber in  
25    a username in a file transferred from the buyer 20 to the  
26    seller 28 using the Internet 12, or by other means.

27             Referring again to Figure 5, upon receiving the  
28    buyer's message 128 that includes the buyer's cardnumber  
29    102, the seller 28 sends an payment-request message 129  
30    to the payment system 10 via the Internet 12.  
31    Specifically, the seller 28 sends the payment-request  
32    message 129 to the above-the-line program 90 on the  
33    above-the-line system 40. The payment-request message  
34    129 may be sent by either e-mail or by using an  
35    interactive protocol on the Internet 12.

36             Referring to Figure 6B, the payment-request  
37    message 129 contains the following information: the



1     buyer's cardnumber 102, the seller's cardnumber 202, a  
2     textual description 232 of the transaction, an amount  
3     234, a merchant's transaction-identifier 236, and any  
4     physical delivery 237 information for the purchase.

5             After receiving the payment-request message  
6     129, the above-the-line program 90 ascertains whether the  
7     payment-request message 129 is from a qualified seller  
8     28. This is performed by the above-the-line program 90  
9     by checking the database file 91 on the above-the-line  
10    system 40. Upon confirmation that the payment-request  
11    message 129 is from a qualified seller, the payment  
12    system 10 generates a message to ask the buyer 20 whether  
13    the buyer 20 wishes to authorize payment for the  
14    transaction to the seller 28. Specifically, as shown in  
15    Figure 7, the above-the-line program 90 generates  
16    an payment-query message 140 to be sent to the buyer 20  
17    over the Internet.

18            As shown in Figure 6C, the payment-query  
19    message 140 contains the following data: a transaction-  
20    identifier 142, the buyer's name 103, the seller's name  
21    203, the textual description of the transaction 232, and  
22    an amount 235. The transaction-identifier 142 is a  
23    number or code uniquely-generated by the above-the-line  
24    program 90. Using the information contained in the  
25    payment-request message 129 from the seller 28,  
26    specifically the buyer's cardnumber 102 and the seller's  
27    cardnumber 202, the above-the-line program 90 looks up  
28    the buyer's name 103 and the seller's name 203. In the  
29    payment-query message 140, the buyer's name 103 and the  
30    seller's name 203 are used instead of the buyer's  
31    cardnumber 102 and the seller's cardnumber 102 in order  
32    to minimize transmission of the cardnumber information  
33    over the Internet thereby improving security of the  
34    system. The amount 235 sent to the buyer may differ from  
35    in the transaction amount 234 received from the seller to  
36    account for any currency exchange rates or service  
37    charges imposed by the payment system 10.

1           After generating the payment-query message 140,  
2     the above-the-line system 40 sends the payment-query  
3     message 140 to the buyer's e-mail address and waits for  
4     a response from the buyer 20. The payment-query message  
5     140 requests the buyer 20 to respond with one of three  
6     possible replies: "yes", "no", or "fraud." Thus, there  
7     are four possible alternatives that can occur in response  
8     to the payment-query message 140, taking into account the  
9     three permitted responses by the buyer and the  
10    possibility of no reply.

11           **1. No reply from Buyer**

12           If there is no reply from the buyer 20 to the  
13    payment-query message 140 after a period of time, the  
14    above-the-line system 40 will send the payment-query  
15    message 140 again, i.e. a second notice. The above-the-  
16    line system 40 may send the payment-query message 140 to  
17    the buyer 20 several times until a response from the  
18    buyer 20 is obtained. If more than a certain number of  
19    days elapses, or more than a certain number of payment-  
20    query messages 140 are outstanding to the buyer 20, and  
21    the above-the-line system 40 does not receive an  
22    appropriate response from the buyer 20, as indicated  
23    below, then the above-the-line system 40 causes the  
24    buyer's cardholder account 100 to become suspended. This  
25    is done by changing the buyer's cardholder state 106 from  
26    "active" to "suspended." The buyer's account 100 may be  
27    reinstated later if an appropriate response is received  
28    and/or the number of outstanding payment-query messages  
29    140 for the buyer 20 drops to less than a certain  
30    threshold. Upon reinstatement, the buyer's account 100  
31    is returned to an "active" state. Further, any  
32    outstanding payment-query messages 140 may be sent again  
33    some time later.

## 2. Buyer responds "no"

Referring to Figure 7, in response to the payment-query message 140, the buyer 20 may respond by sending a payment-response message 150 to the above-the-line system 40 via the Internet 12. As illustrated in Figure 6D, the payment-response message 150 contains the following data: the payment system generated transaction-identifier 142 and an indication 152 of the buyer's willingness to allow transfer of funds. The willingness indication 152 is one of "yes", "no", or "fraud."

The structure of the payment-query message 140 facilitates preparation of the payment-response message 150 by the buyer 20. In the payment-query message 140, the transaction-identifier 142 is placed in the "subject" of the payment-query message 140 and the e-mail address to which the buyer's payment-response message 150 should be sent (e.g. "response@card.com") is placed in the "sender's address" of the payment-query message 140. Many conventional e-mail programs in use on the Internet, including many older programs, have a feature that will automatically read the "subject" and "sender's address" of a received message and format a reply message directed to the sender's address with the same "subject" as the received message. If the buyer 20 uses this common feature to send his payment-response message 150 back to the payment system 10, the only information that the buyer 20 will have to add is the willingness indication 152 which is only a one word or one letter reply, (i.e., "yes", "no", or "fraud", or "Y", "N", or "F").

If the buyer 20 replies "no" in the willingness indicator 152, the above-the-line system 40 sends a payment-result 160 to the seller 28 with a "no" indication 152. The format of a payment-result message 160 is shown in Figure 6E. A payment-result message 160 contains the following information: the transaction-identifier 142, the seller's name 203, the buyer's name

1       103, the textual description of the transaction 232, the  
2       amount 235, the negative indication 152 of the buyer's  
3       willingness to allow transfer of funds, and the seller's  
4       transaction-identifier 236 if present in the originating  
5       payment-request message 129. Optionally, the original  
6       transaction amount 234 may also be included. When a  
7       buyer declines to authorize payment, a service charge may  
8       be generated to the buyer 20 by the payment system.

9               Information regarding the buyer's "no" reply in  
10       the payment-response 150 is delivered from the above-the-  
11       line program 90 to the below-the-line program 92 where a  
12       service charge may be added to a settlement queue for the  
13       buyer 20, as discussed in the related application.  
14       Further, if a "no" indication is received more than  
15       a certain number of times in a certain number of  
16       transactions over a certain time period, then the state  
17       106 of buyer's account 100 may become "suspended". This  
18       is to prevent a user from making a practice of ordering  
19       products without authorizing payment for them. If the  
20       buyer's account state 106 becomes suspended, this  
21       information is also transmitted by batch processing from  
22       the above-the-line program 90 to the below-the-line  
23       program 92 so that the cardholder account information on  
24       the below-the-line computer 52 conforms to that on the  
25       above-the-line computer 50.

### 26               3.    Buyer responds "fraud"

27               Referring again to Figure 7, if the buyer 20  
28       responds to the payment-query message 140 by sending a  
29       payment-response message 150 to the above-the-line  
30       computer 50 via the Internet 12 that indicates "fraud" in  
31       the willingness indication 152, the payment system 10  
32       changes the state 106 of the buyer's cardholder account  
33       100 to "invalid." A response of "fraud" indicates that  
34       the buyer 20 did not request the goods or services from  
35       the seller 28. The information that the buyer 20  
36       responded "fraud" to the willingness indication 152 is

1 transmitted by batch processing from the above-the-line  
2 program 90 to the below-the-line program 92 so that the  
3 cardholder account information on the below-the-line  
4 computer 52 conforms to that on the above-the-line  
5 computer 50. If the buyer 20 responds "fraud", an  
6 appropriate message is sent to seller 28.

7 **4. Buyer responds "yes"**

8 If, in response to the payment-query message  
9 140, the buyer 20 responds by sending a payment-response  
10 message 150 to the above-the-line system 40 via the  
11 Internet 12 that indicates "yes" in the willingness  
12 indication 152, the above-the-line program 90 transfers  
13 the transaction information, by batch processing, to the  
14 below-the-line system 52. The information communicated  
15 from the above-the-line system 50 to the below-the-line  
16 system 52 includes the buyer's cardnumber 102, the  
17 seller's cardnumber 202, a transaction number 142, the  
18 amount of the transaction 235, and any physical delivery  
19 information for the purchase.

20 When the below-the-line system 52 receives the  
21 information from the above-the-line system 50, it  
22 associates the identified buyer's cardnumber 102 with the  
23 buyer's payment information. This information is stored  
24 in the data file 114 on the below-the-line storage 72.  
25 The below-the-line system 42 also associates the seller's  
26 account number 202 with the seller's agent number 219  
27 which is also stored on the below-the-line system storage  
28 72.

29 Next, referring to Figure 8, the below-the-line  
30 system 42 communicates with the seller's agent 115  
31 associated with the seller's agent number 219. The  
32 communication 250 to the seller's agent 115 identifies  
33 the seller 203, the transaction amount 235, the buyer's  
34 payment information (such as the buyer's credit card  
35 number), and any physical delivery information for the  
36 purchase. The communication 250 to the seller's agent

1 115 is performed off the Internet on secure communication  
2 channels. The communication 250 requests whether the  
3 seller's agent 115 will authorize a charge of the  
4 indicated amount 235 to the buyer's credit card.

5 If the seller's agent 115 indicates that it  
6 will approve the charge, it sends an authorization code  
7 260 to the below-the-line system 40. Upon receipt of the  
8 authorization code 260, the below-the-line program 92  
9 generates a cryptographic signature for the authorization  
10 code 260. In a preferred embodiment, public key  
11 cryptography is used, such as programs available from  
12 RSA, or PGP. For purposes of security, it is very  
13 desirable to ensure the authenticity of the sender of the  
14 authorization code. Accordingly, public key cryptography  
15 is used to authenticate the sender's message (in this  
16 case, the message of the payment system 10) and is not  
17 necessarily used to prevent someone else from reading the  
18 authorization code.

19 The signed authorization code 262 is batch  
20 processed across the line 44 from the below-the-line  
21 system 42 to the above-the-line system 40. Referring to  
22 Figure 9, upon receipt of the encrypted authorization  
23 code 262 from the below-the-line system 42, the above-  
24 the-line system 40 prepares and sends a payment-  
25 notification 264 to seller 28. The payment-notification  
26 264 may be a plain text e-mail message that includes the  
27 seller's transaction identifier 236 and the  
28 cryptographically signed authorization code 262. The  
29 information included in the payment-notification message  
30 264 is represented in Figure 6F. Upon receipt of the  
31 payment-notification 264, the seller 28 can authenticate  
32 the authorization code 260 using the public key of the  
33 payment system used by the encryption program on the  
34 below-the-line system 42. Upon verification of the  
35 authenticity of the message 264, the seller 28 can  
36 proceed to deliver the goods or services to the buyer 20  
37 using whatever arrangements had been previously made.

1 Further processing of the charges to the  
2 buyer's credit card account and credits to the seller's  
3 merchant account are conducted by the conventional  
4 settlement system 30 off the Internet using secure  
5 communications channels. This isolates the buyer-seller  
6 activity which occurs on the Internet from the financial  
7 and credit activity which occurs off the Internet.

8 If the seller's agent 115 accepts the buyer's  
9 card, the charge is processed in the conventional way in  
10 the credit card system 30 to post the charge to the  
11 buyer's credit card in the usual manner by sending the  
12 appropriate information to the buyer's credit card issuer  
13 32. The buyer's credit card issuer 32 sends the buyer 20  
14 a credit card bill, typically via the postal system. The  
15 credit card bill lists the charge 235 as an item on the  
16 user's credit card bill. The settlement system 30 also  
17 arranges to make a payment to the seller 28. This may be  
18 a transfer from the acquirer-bank 34 to the seller's bank  
19 for direct deposit to the seller's checking account.

20 If the seller's agent 115 refuses to accept the  
21 buyer's credit card number, e.g. the credit card is lost,  
22 stolen, canceled, expired, or the transaction amount  
23 exceeds the card's limit, etc., the seller's agent does  
24 not send an authorization code back to the below-the-line  
25 system 42. Instead, the seller's agent may send a code  
26 indicating refusal of the buyer's card. This information  
27 is similarly batch processed to the above-the-line system  
28 42 and an appropriate message is sent to the seller 28  
29 indicating the lack of authorization. The seller 28 may  
30 then refuse to deliver the goods or services to the buyer  
31 20, or request another card number.

32 The description previously set forth explains  
33 how the payment system can process a charge to the user  
34 using the conventional, commercially available credit  
35 card system. There may be various modifications of the  
36 previously described arrangement that may be utilized.  
37 For example, the issuer bank 32 may process a debit to a

1 bank account of the buyer 20 instead of sending a credit  
2 card bill. Alternately, the issuer bank 32 may send the  
3 buyer a bill (other than a credit card bill) for the  
4 accumulated charges.

5 As mentioned above, the function of the  
6 seller's agent may be performed by the payment system  
7 instead of a separate entity. According to this  
8 alternative, instead of communicating the information  
9 about the transaction (i.e. the seller, the transaction  
10 amount, the buyer's credit card number, physical delivery  
11 information, etc.) to a separate party designated by the  
12 seller as its agent who in turn replies whether it will  
13 approve the transaction, the payment system can perform  
14 this function itself. If this function is performed by  
15 the payment system, it is performed either on the below-  
16 the-line system or on an another entirely separate,  
17 secure system. Like a separate seller's agent, the  
18 payment system would communicate with the appropriate  
19 credit card services to determine whether to authorize  
20 the transaction in the amount identified in the  
21 communication from the above-the-line system. The  
22 payment system would then perform the seller's agent's  
23 function of generating an authorization code. Then, as  
24 in the above-described embodiment having separate  
25 seller's agents, the payment system would generate a  
26 cryptographically-signed message including the  
27 authorization code, send the message to the above-the-  
28 line system, and send the cryptographically-signed  
29 message to the seller over the Internet.

30 The payment system described above is  
31 particularly advantageous for use on networks that do not  
32 have a centralized management authority, such as the  
33 Internet. Other such systems include FIDOnet and  
34 UUCP/Usenet, although it is recognized that these systems  
35 are considered by some to part of or associated with the  
36 Internet. The payment system described above could also



1 be used on future versions, generations, etc., of the  
2 Internet. The payment system could also be used on  
3 centrally managed computer systems, such as America  
4 Online, Prodigy, etc.

5 The payment system described above enables  
6 Internet users to initiate commercial transactions to buy  
7 and sell goods or services over a quasi-public network,  
8 such as the Internet, regardless of where the users are  
9 located or where the payment system is located. Either  
10 the buyer or the seller may be located in the U.S. or  
11 outside the U.S. Also, some or all of the payment system  
12 components, such as the above-the-line system or the  
13 below-the-line system, may be located either in the U.S.  
14 or outside the U.S.

15 The foregoing detailed description should be  
16 regarded as illustrative rather than limiting and the  
17 appended claims including all equivalents are intended to  
18 define the scope of the invention.

1 WE CLAIM:

2 1. A method for enabling a seller and a buyer  
3 communicating over a quasi-public network to initiate a  
4 commercial transaction involving a payment of funds by  
5 the buyer to the seller, said method comprising the steps  
6 of:

7 receiving a message over the quasi-public network  
8 from the seller, the seller's message identifying the  
9 buyer and a transaction;

10 sending a message over the quasi-public network to  
11 the identified buyer, said message to the buyer  
12 identifying the transaction;

13 receiving a message over the quasi-public network  
14 from the identified buyer, said buyer's message  
15 indicating acceptance or refusal of the transaction;

16 if the buyer's message indicates approval of the  
17 transaction, communicating to an agent of the seller via  
18 a secure communication channel information for permitting  
19 the buyer to pay for transaction;

20 receiving an authorization code from the seller's  
21 agent via said secure communication channels; and

22 sending a cryptographically-signed message including  
23 the authorization code to the seller via the quasi-public  
24 network.

25 2. The method of claim 1 further comprising the  
26 step of:

27 connecting a computer system to the quasi-public  
28 network, said computer system having a means for sending  
29 and receiving messages.

30 3. The method of claim 1 in which the  
31 cryptographically-signed message utilizes public key  
32 cryptography.

33 4. The method of claim 1 further comprising the  
34 steps of:

1           cryptographically-encoding the authorization code;  
2       and  
3           attaching said cryptographically-encoded  
4       authorization code to the message to the seller.

5           5.     The method of claim 1 in which the message  
6       received over the quasi-public network from a qualified  
7       seller is an e-mail message.

8           6.     The method of claim 1 in which the message sent  
9       over the quasi-public network to the identified buyer is  
10      an e-mail message.

11          7.     The method of claim 1 in which the message  
12      received over the quasi-public network from the  
13      identified buyer is an e-mail message.

14          8.     The method of claim 1 in which the message sent  
15      over the quasi-public network to the seller is an e-mail  
16      message.

17          9.     The method of claim 1 in which the quasi-public  
18      message is the Internet.

19          10.    The method of claim 1 further comprising the  
20      step of:  
21          qualifying users of the quasi-public network as  
22      sellers.

23          11.    The method of claim 1 further comprising the  
24      step of:  
25          maintaining a database of account holders who are  
26      users of the quasi-public network.

27          12.    The method of claim 11 in which said database  
28      includes information regarding account holders who are

1       qualified as sellers and account holders who are not  
2       qualified as sellers.

3               13. The method of claim 11 in which the database  
4       includes information indicating whether an account holder  
5       is qualified as a seller.

6               14. The method of claim 1 further comprising the  
7       step of maintaining a first system and a second system,  
8               said first system comprising communication  
9       accessible to the quasi-public network, and  
10              said second system comprising communication  
11       accessible to sellers' agents who interface with a  
12       bankcard processing network, and further in which said  
13       method further comprises the step of:  
14              communicating information regarding the  
15       transaction from the first system to the second system,  
16       after approval by the buyer of the transaction.

17              15. The method of claim 1 further comprising the  
18       step of maintaining a first system and a second system,  
19              said first system comprising a first database  
20       of account holders, said account holders being users of  
21       the quasi-public network and including a first group of  
22       account holders who are qualified as sellers and a second  
23       group of account holders who are not qualified as  
24       sellers, and  
25              said second system comprising a second database  
26       of said account holders including information associated  
27       with said second group of account holders including means  
28       by which payment can be made by said second group of  
29       account holders.

30              16. The method of claim 15 further comprising the  
31       step of maintaining a firewall between said first system  
32       and said second system

1           17. The method of claim 1 in which communication  
2           between the first system and the second system is by  
3           batch processing.

4           18. The method of claim 1 in which the transaction  
5           is for goods or services provided by the seller to the  
6           buyer.

7           19. A method of operating a system that enables a  
8           seller and a buyer communicating over a quasi-public  
9           network to enter into a commercial transaction involving  
10          a payment of funds by the buyer for goods or services of  
11          value provided by the seller to the buyer, said method  
12          comprising the steps of:

13                qualifying a first group of users of the quasi-  
14                public network as sellers;

15                maintaining bankcard payment information for a  
16                second group of users of the quasi-public network, said  
17                bankcard payment information maintained on a storage  
18                medium in a secure portion of a computer system;

19                maintaining listings of said first and second groups  
20                of users on a storage medium that is located in a portion  
21                of said computer system that has access to the quasi-  
22                public network, but that is isolated from the secure  
23                portion of the computer system;

24                in response to a message over the quasi-public  
25                network from a user of the first group identifying a  
26                potential transaction with a user of the second group,  
27                sending a message over the quasi-public network to the  
28                identified user of the second group for confirmation;

29                upon receipt of a message over the quasi-public  
30                network from the user of the second group confirming the  
31                transaction with the user of the first group,  
32                communicating bankcard information over secure channels  
33                to an agent of the user of the first group;

1           upon receipt of an authorization code from the agent  
2           via secure channels, cryptographically signing the  
3           authorization code; and

4           sending the authorization code to the user of the  
5           first group via the quasi-public network.

6           20. The method of claim 19 further comprising the  
7           step of:

8           receiving authorization from said first group of  
9           users to act as said agent.

10          21. The method of claim 20 further wherein said  
11          authorization code is generated by said system.

12          22. A system for enabling commerce among users on a  
13          quasi-public computer network, comprising:

14               means for sending and receiving messages to users on  
15               the quasi-public network;

16               means for identifying users who are qualified as  
17               sellers;

18               means for identifying messages received from users  
19               who are qualified as sellers;

20               means for generating messages to users who are  
21               buyers identified in the messages received from the  
22               qualified sellers requesting confirmation of transactions  
23               between said users who are sellers and said users who are  
24               buyers;

25               means for identifying messages from the buyers  
26               indicating confirmation of the transactions;

27               means for isolating the sending and receiving of  
28               messages to and from users from financial information  
29               associated with said users who are buyers for settling  
30               financial transactions;

31               means for sending financial information associated  
32               with buyers via secure channels to agents of sellers  
33               relative to confirmed transactions;

1           means for receiving authorization codes from the  
2   sellers' agents;  
3           means for cryptographically signing the  
4   authorization codes; and  
5           means for generating messages to the sellers  
6   including the cryptographically encoded authorization  
7   codes.

8           23. A method of operating a computer system to  
9   enable users of a quasi-public network to initiate a  
10   commercial transaction involving a payment of funds by  
11   one user of the quasi-public network to another user of  
12   the quasi-public network, the method comprising the steps  
13   of:

14           maintaining a listing of users of the quasi-public  
15   network who are qualified to function as sellers;

16           operating a computer system that is connected to the  
17   quasi-public network, said computer system having a means  
18   for sending and receiving messages from users of the  
19   quasi-public network;

20           upon receipt of a message over the quasi-public  
21   network from a first user of the quasi-public network,  
22   said first user being qualified to function as a seller,  
23   sending a message over the quasi-public network to a  
24   second user of the quasi-public network, said second user  
25   being identified in the message from the first user, said  
26   message being sent to the second user including a request  
27   to confirm a transaction identified in the message  
28   received from the first user;

29           upon receipt of a confirmation of the transaction  
30   from the second user, forwarding payment information of  
31   the second user to an agent of the first user; and

32           upon receipt of an authorization code from the  
33   agent, encrypting the authorization code and sending the  
34   authorization code to the first user.

- 1           24. A payment system for use with the Internet  
2           comprising:  
3           qualifying a user as a seller;  
4           receiving a message via the Internet from the  
5           qualified seller regarding a transaction with a buyer  
6           that identifies at least an account identification of the  
7           buyer, said account identification maintained by the  
8           system;  
9           requesting confirmation of the transaction from the  
10          buyer by communicating a message to the buyer via the  
11          Internet;  
12          upon receiving confirmation from the buyer of the  
13          transaction from the buyer via the Internet;  
14          sending a message off the Internet to an agent of  
15          the seller, said message containing information relating  
16          to the transaction and payment information for the buyer;  
17          receiving confirmation of the transaction from the  
18          seller's agent; and  
19          communicating an authorization code to the seller.
- 20          25. The method of claim 24 further comprising the  
21          step of:  
22          obtaining authorization from said seller to act as  
23          an agent therefor.
- 24          26. The method of claim 25 further comprising the  
25          steps of:  
26          confirming the transaction and payment information  
27          as seller's agent; and  
28          generating said confirmation as seller's agent.
- 29          27. The method of claim 24 further comprising the  
30          step of cryptographically signing a message including the  
31          authorization code communicated to the seller.



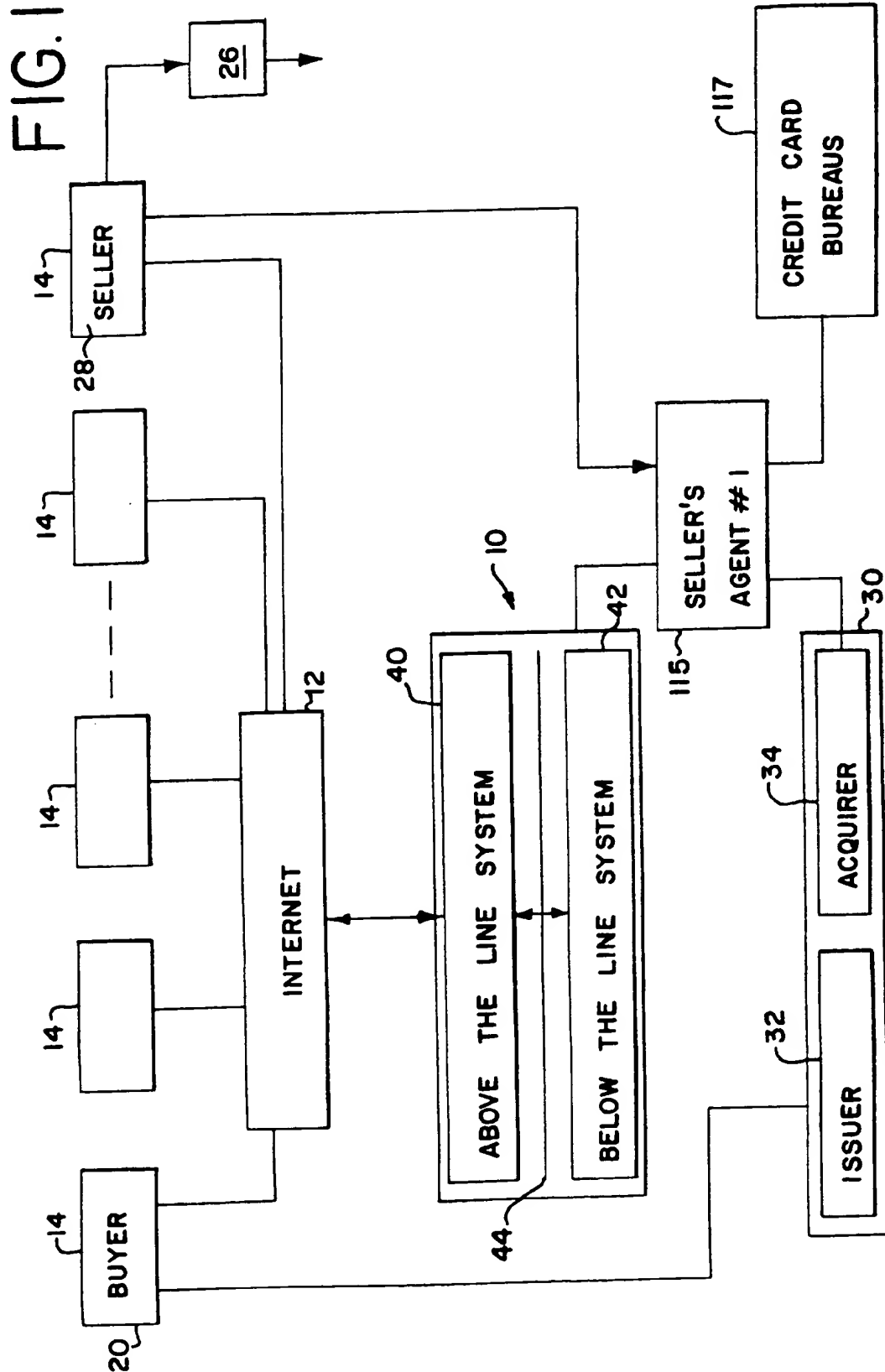
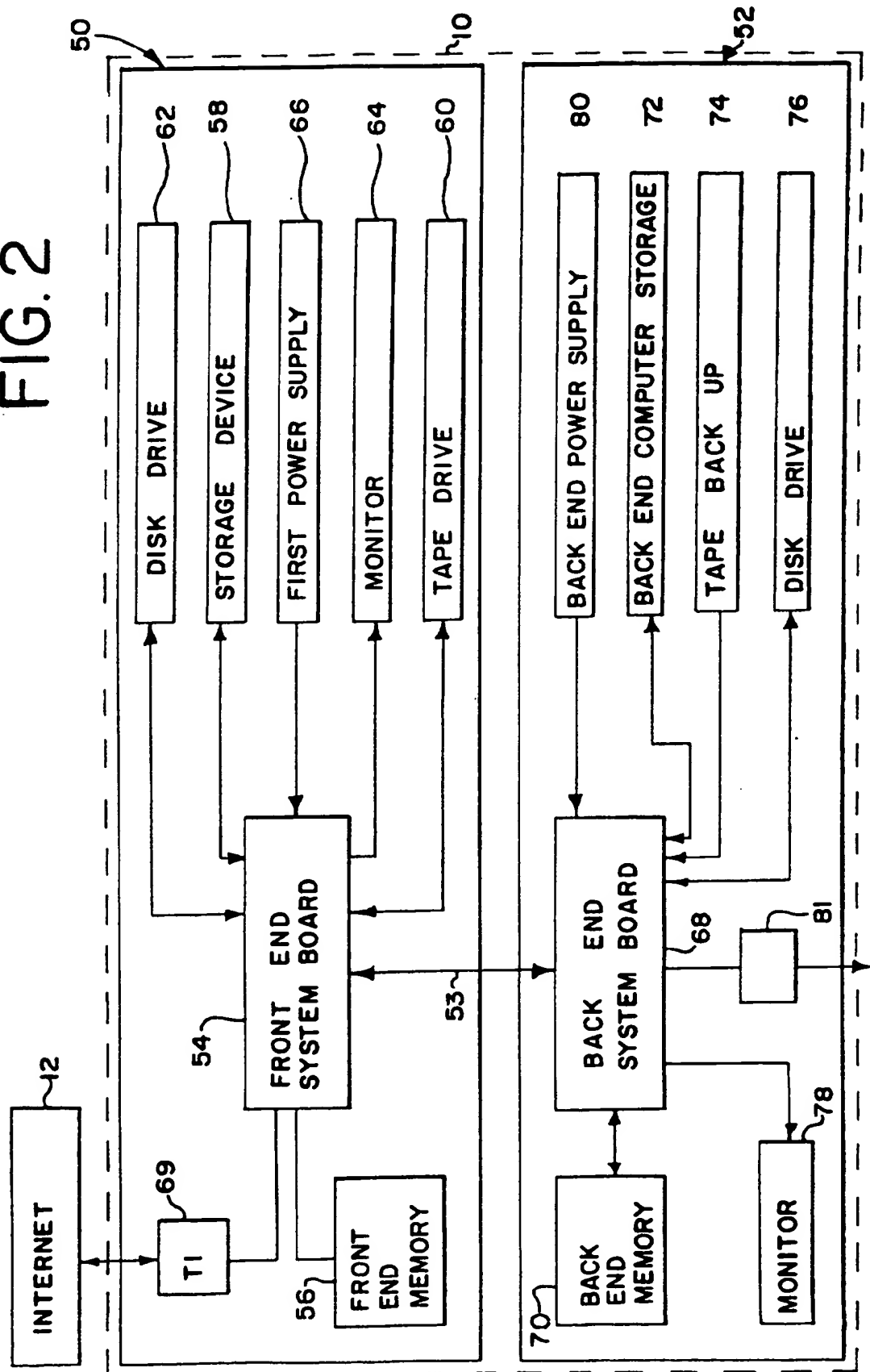


FIG. 2



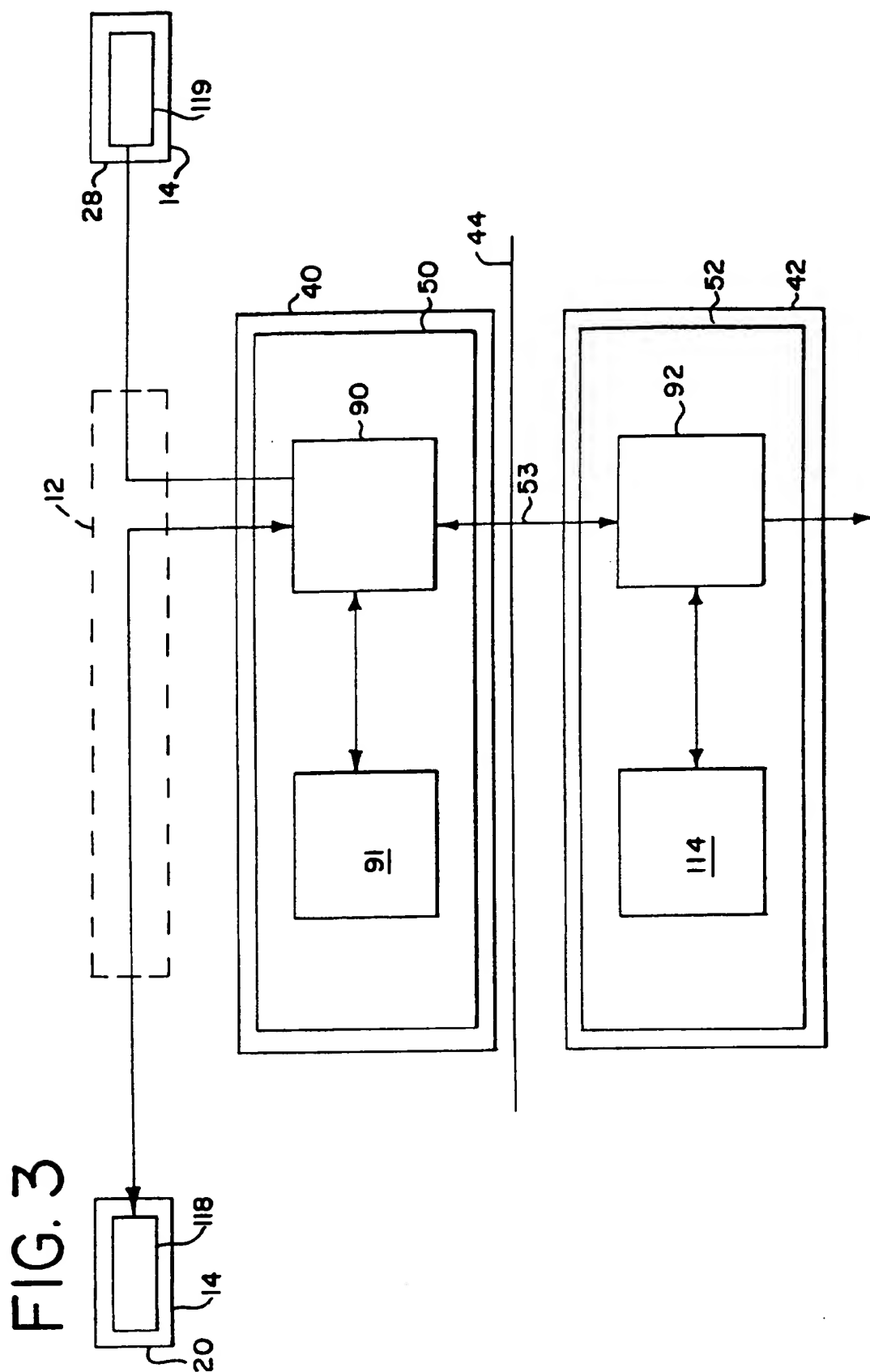


FIG. 4A

100

| CARD HOLDER ACCOUNT         |     |
|-----------------------------|-----|
| CARD NUMBER                 | 102 |
| NAME                        | 103 |
| INTERNET ELECTRONIC ADDRESS | 104 |
| STATE                       | 106 |
| PAY-IN SELECTION            | 108 |
|                             |     |

FIG. 4B

200

| SELLER'S ACCOUNT            |     |
|-----------------------------|-----|
| CARD NUMBER                 | 202 |
| NAME                        | 203 |
| INTERNET ELECTRONIC ADDRESS | 204 |
| STATE                       | 206 |
| SELLER'S AGENT              | 219 |
|                             |     |

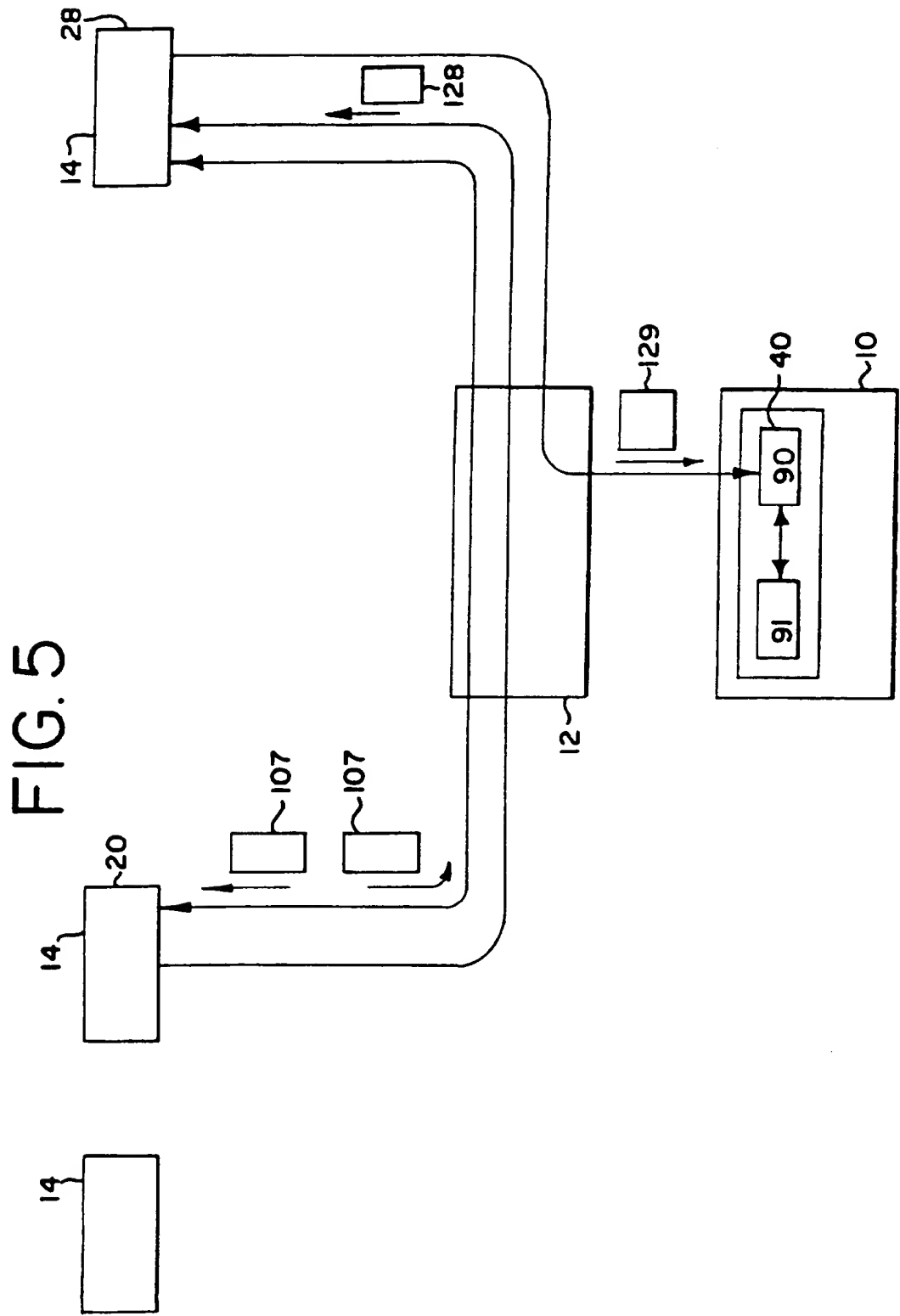


FIG. 6A

|     |  |
|-----|--|
| 102 |  |
|     |  |

128

FIG. 6B

|                   |  |
|-------------------|--|
| PAYMENT - REQUEST |  |
| 102               |  |
| 202               |  |
| 232               |  |
| 234               |  |
| 236               |  |
| 237               |  |
|                   |  |
|                   |  |

129

FIG. 6C

|                 |  |
|-----------------|--|
| PAYMENT - QUERY |  |
| 142             |  |
| 103             |  |
| 203             |  |
| 232             |  |
| 235             |  |
|                 |  |
|                 |  |

140

FIG. 6D

|                    |  |
|--------------------|--|
| PAYMENT - RESPONSE |  |
| 142                |  |
| 152                |  |
|                    |  |
|                    |  |

150

FIG. 6E

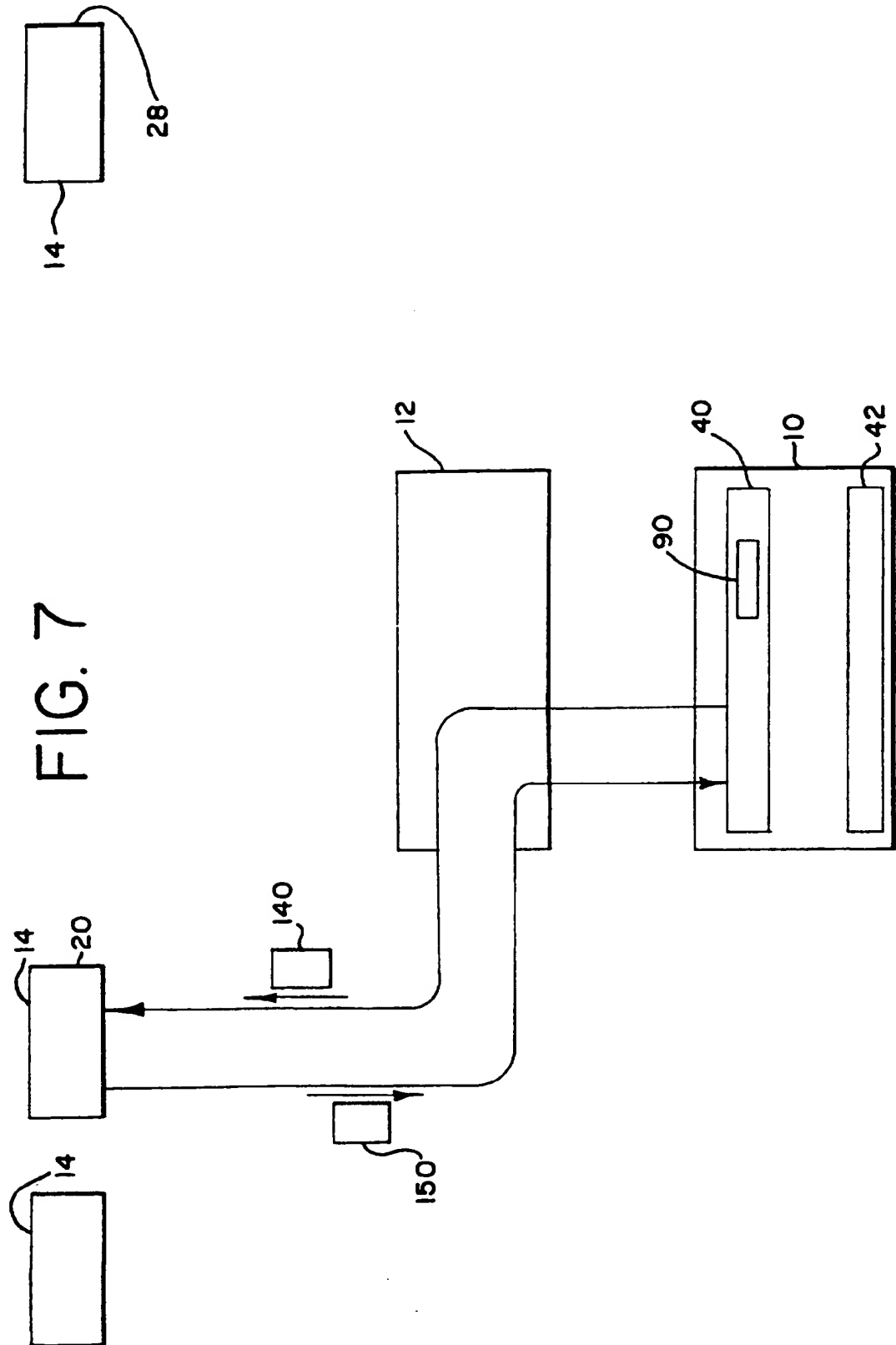
|                  |  |
|------------------|--|
| PAYMENT - RESULT |  |
| 142              |  |
| 203              |  |
| 103              |  |
| 232              |  |
| 152              |  |
| 236              |  |
| 234              |  |
|                  |  |

160

FIG. 6F

|                        |  |
|------------------------|--|
| PAYMENT - NOTIFICATION |  |
| 236                    |  |
| 262                    |  |
|                        |  |
|                        |  |

264



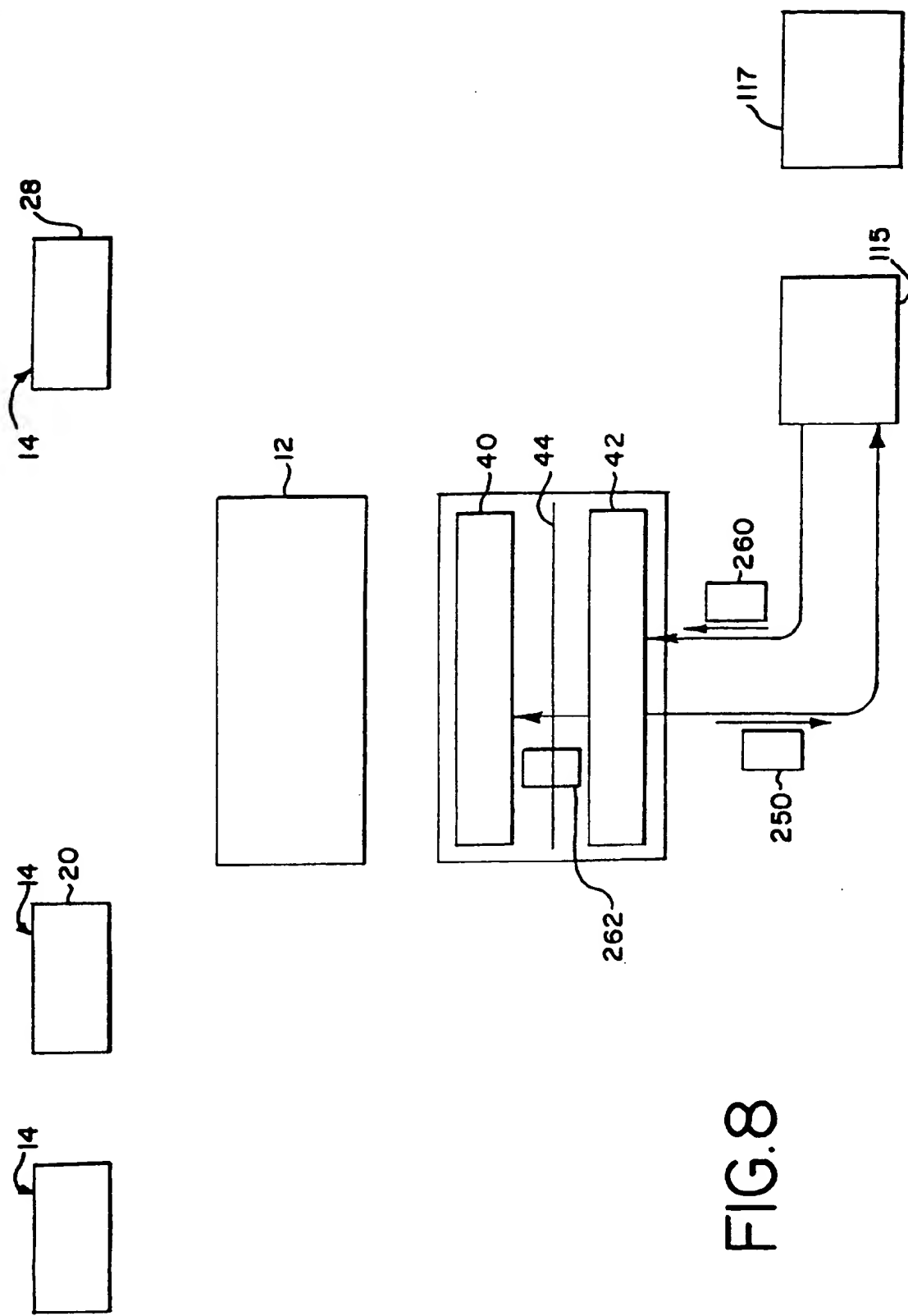


FIG. 8



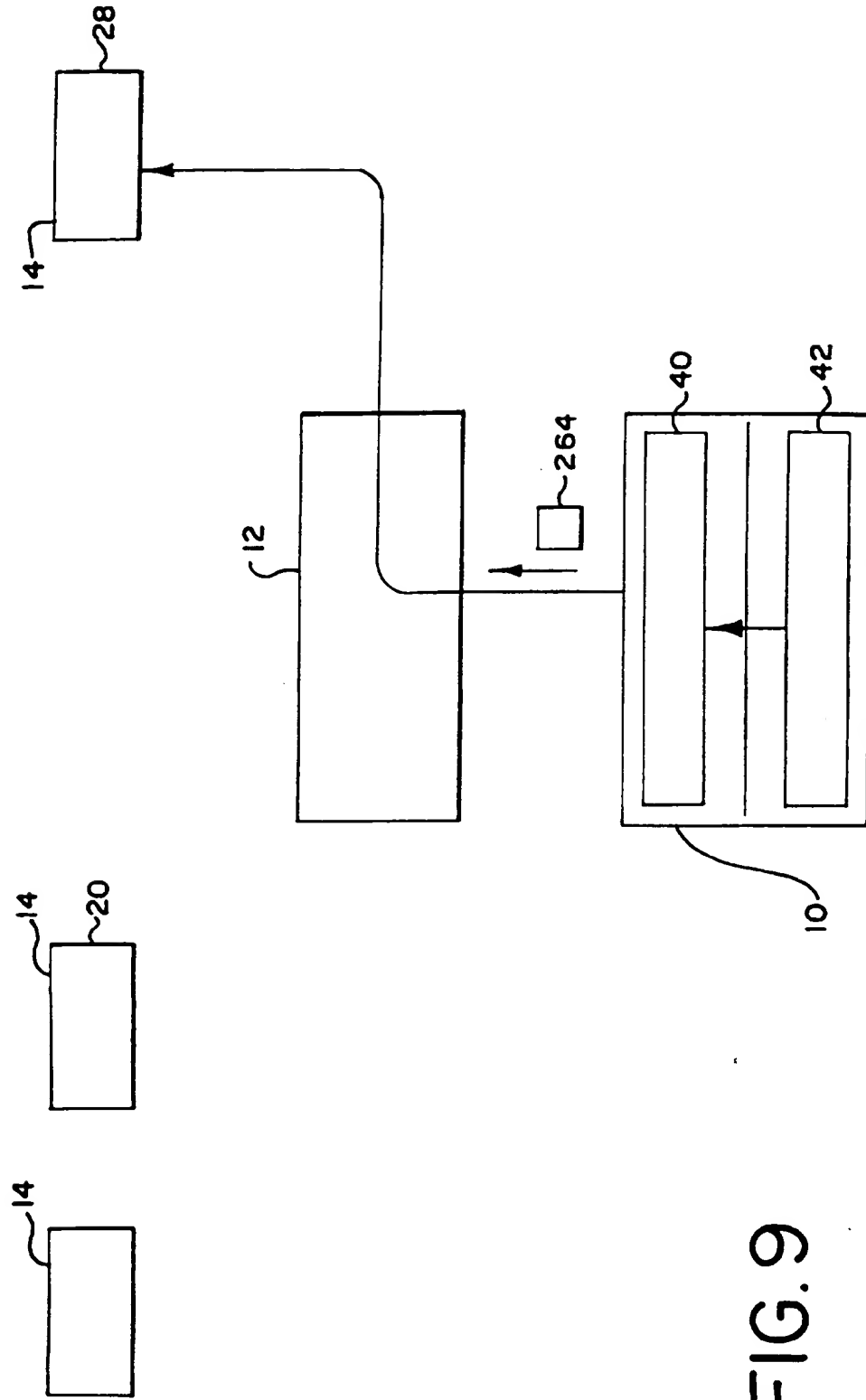


FIG. 9

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☒ **FADED TEXT OR DRAWING**
- ☒ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**